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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,366	08/24/2001	Anthony T. Vu	GEMS8081.092	9522

27061 7590 06/04/2004

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EXAMINER

SHAW, SHAWNA JEANNINE

ART UNIT PAPER NUMBER

3737

DATE MAILED: 06/04/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/682,366

Applicant(s)

VU

Examiner

Shawna J. Shaw

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 8/24/01, 9/10/01, 11/26/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2, 3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because figure 4 contains blacked out text. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 2 and 11-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claim 2, the specification does not provide adequate support for modifying the pulse sequence "on-the-fly." Regarding claim 11, the specification does not disclose software for modifying the pulse sequence upon demand to acquire 2D or 3D images and reconstruct MR images. Regarding claim 18, the specification does not disclose a computer program or software for carrying out the recited functions.
3. Claims 11-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. In claim 11, "a computer programmed to" is vague and indefinite in that it cannot be clearly ascertained which disclosed elements correspond to this feature. For example, does the (programmed) computer correspond to computer system 20, system control 32, CPU 36, a combination thereof, etc.? In claim 18, "a computer readable storage medium" is vague and indefinite in that it cannot be clearly ascertained which disclosed elements correspond to this feature (e.g., elements 28, 30, 24, 26, 36, 66, or a combination thereof?)

#### ***Claim Interpretation***

4. The examiner understands that the present invention effects selective, on demand modification of the pulse sequence from 3D mode to 2D mode, and vice versa, through operator console 12 which sends desired scan sequence commands from the operator to system control 32 and pulse generator 38 [0019], and further wherein modification of the pulse sequence from 3D to 2D merely involves disabling of gradients in one dimension [0023-24]. For examination purposes, the examiner assumes that the computer "programmed" to perform the above functions corresponds to system control 32 (comprising CPU 36) and the computer readable medium corresponds to elements 28 and/or 30.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Fain et al.

Regarding claims 1-10, Fain et al. teaches a method for applying a pulse sequence (e.g., fig. 4B) that is applicable as a 3D pulse sequence with gradients disabled in one dimension (e.g., along the z-axis, fig. 3), acquiring 2D data with the pulse sequence to localize a 3D imaging volume, enabling the gradients in the third dimension (e.g., along the z axis), and acquiring 3D image data. Fain additionally teaches seamless transition between 2D and 3D data acquisition (col. 7 lines 17-35) as well as adjustment of parameters such as flip angle (col. 8 lines 8-10). Fain further discloses acquiring an initial full k-space data set and subsequent partial k-space data sets (col. 6 lines 38-44, col. 7 lines 44-53). Fain also teaches detection of patient movement, bolus movement, and movement of objects such as catheters, etc. (col. 8 lines 18-22 and 25-37). Fain further discloses using 2D image data to monitor arrival of a contrast agent/bolus in different field of views before switching to 3D acquisition (col. 7 line 58 – col. 8 line 48). See also claims 1-10.

Regarding claims 11-17, Fain teaches a computerized magnetic resonance apparatus including a conventional MRI system (fig. 1) having a computer (122, 107), which: receives control commands from a user input (102, col. 2 lines 48-50 and col. 2 line 66 – col. 3 line 8); modifies a pulse sequence between 2D and 3D acquisition in real-time (col. 7 lines 17-35) wherein gradients along one axis are disabled for 2D

acquisition (e.g., along the z axis, fig. 3); and reconstructs the acquired MR images. In addition, Fain discloses wherein the system acquires an initial full k-space data set and subsequent partial k-space data sets (col. 6 lines 38-44, col. 7 lines 44-53).

Regarding claims 18-24, Fain teaches a computer readable storage medium (119, 160) (inherently) having instructions executable by computer (122) to: use common pulse sequence (e.g., fig. 4B) to acquire MR images in 2D and/or 3D (col. 7 lines 17-35) wherein gradients along one axis are disabled for 2D acquisition (e.g., along the z axis, fig. 3), and receive operator input regarding desired scan control parameters (col. 2 lines 48-50, col. 2 line 66 – col. 3 line 8 and col. 7 lines 17-53). In addition, Fain discloses acquiring an initial full k-space data set and subsequent partial k-space data sets (col. 6 lines 38-44, col. 7 lines 44-53). Fain also teaches detection of patient movement, bolus movement, and movement of objects such as catheters, etc. (col. 8 lines 18-22 and 25-37).

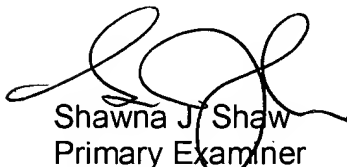
Regarding claims 25-27, Fain teaches a real-time magnetic resonance fluoroscopy method including identifying a field of view, entering a real-time 2D monitoring and navigating mode (col. 2 lines 18-21, col. 8 lines 31-34), and switching between 2D mode and 3D mode to acquire 3D images of the desired imaging volume (col. 2 lines 22-28, col. 8 lines 34-37, col. 7 lines 17-43). See also claims 1-9.

### **Conclusion**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawna J. Shaw whose telephone number is (703) 308-2985. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Ruhl can be reached on (703) 308-2262. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shawna J. Shaw  
Primary Examiner  
5/24/02004